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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,286

06/08/2006

Atsushi Toujo

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EXAMINER

TAKAOKA, DEAN O

ART UNIT

PAPER NUMBER

2817

NOTIFICATION DATE

DELIVERY MODE

12/02/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/596,286	<b>Applicant(s)</b> TOUJO ET AL.	
	<b>Examiner</b> DEAN O. TAKAOKA	<b>Art Unit</b> 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10, 11, 13, 16, 18, 19, 21, 24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 12, 14, 15, 17, 20, 22, 23 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/17/07, 6/27/07</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 11, 16, 18 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by lida et al. (US 6,747,525), patent of prior art publication cited in Applicant's IDS dated June 6, 2008.

Claim 10: lida shows a directional coupler comprising: a first dielectric (10) layer; a second dielectric layer (1); and two line electrodes (2, 3) arranged on each of the first and second dielectric layers (Figs. 1-4); wherein the two line electrodes include an inner line electrode (2) and an outer line electrode (3) that surrounds the inner line electrode, as viewed from above; a first end of the inner line electrode arranged on the first dielectric layer and a first end of the inner line electrode arranged on the second dielectric layer are connected through a first via hole (22) in the first dielectric layer; a first end of the outer line electrode arranged on the first dielectric layer and a first end of the outer line electrode arranged on the second dielectric layer are connected through a second via hole (23) in the first dielectric layer; and corresponding currents are transmitted in the same direction through sections of the inner line electrode and the outer line electrode that are adjacent and substantially parallel to each other (inherent by definition of the directional coupler).

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Claim 11: A directional coupler comprising: a first dielectric layer; a second dielectric layer; and two line electrodes arranged on each of the first and second dielectric layers; wherein the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above; a first end of the inner line electrode arranged on the first dielectric layer and a first end of the inner line electrode arranged on the second dielectric layer are connected through a first via hole in the first dielectric layer; and a first end of the outer line electrode arranged on the first dielectric layer and a first end of the outer line electrode arranged on the second dielectric layer are connected through a second via hole in the first dielectric layer (discussed in the reasons for rejection of claim 10 above).

Claim 16: The directional coupler according to Claim 10, wherein the inner line electrode and the outer line electrode are arranged on the same plane (Figs. 1-4).

Claim 18: The directional coupler according to Claim 10, wherein at least one of the inner line electrode and the outer line electrode is divided into line electrode components arranged on a plurality of planes, and the divided line electrode components are connected in series with each other through the first or the second via hole (Figs. 1-4).

Claim 24: The directional coupler according to Claim 11, wherein the inner line electrode and the outer line electrode are arranged on the same plane.

Claims 10, 11, 13, 16, 18, 19, 21, 24, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Chaturvedi et al. (US 5,742,210), prior art cited in Applicant's IDS dated May 17, 2007.

Claim 10: Chaturvedi shows a directional coupler comprising: a first dielectric layer (303); a second dielectric layer (304); and two line electrodes arranged on each of the first and second dielectric layers (lines A and B formed on plural layers); wherein the two line electrodes include an inner line electrode (A) and an outer line electrode (B) that surrounds the inner line electrode, as viewed from above (i.e. B surrounding A on layers 308, 307); a first end of the inner line electrode arranged on the first dielectric layer and a first end of the inner line electrode arranged on the second dielectric layer are connected through a first via hole in the first dielectric layer; a first end of the outer line electrode arranged on the first dielectric layer and a first end of the outer line electrode arranged on the second dielectric layer are connected through a second via hole in the first dielectric layer (inherent where vias connect lines A and B – c4, ln 21); and corresponding currents are transmitted in the same direction through sections of the inner line electrode and the outer line electrode that are adjacent and substantially parallel to each other (inherent by definition of the directional coupler).

Claim 11: A directional coupler comprising: a first dielectric layer; a second dielectric layer; and two line electrodes arranged on each of the first and second dielectric layers; wherein the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above; a first end of the inner line electrode

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arranged on the first dielectric layer and a first end of the inner line electrode arranged on the second dielectric layer are connected through a first via hole in the first dielectric layer; and a first end of the outer line electrode arranged on the first dielectric layer and a first end of the outer line electrode arranged on the second dielectric layer are connected through a second via hole in the first dielectric layer (discussed in the reasons for rejection of claim 10 above).

Claim 13: The directional coupler according to Claim 10 wherein a length of each of the inner line electrode and the outer line electrode is less than a quarter of a wavelength (c8, lns 8,9).

Claim 16: The directional coupler according to Claim 10, wherein the inner line electrode and the outer line electrode are arranged on the same plane.

Claim 18: The directional coupler according to Claim 10, wherein at least one of the inner line electrode and the outer line electrode is divided into line electrode components arranged on a plurality of planes, and the divided line electrode components are connected in series with each other through the first or the second via hole.

Claim 19: The directional coupler according to Claim 10, further comprising a fourth dielectric layer and a ground electrode arranged on the fourth dielectric layer, wherein a capacitance is formed between the ground electrode and ends of the inner line electrode and the outer line electrode (ground planes 301 and/or 309; inherent where broadside coupling occurs between sheets – c7, lns 47-55).

Claim 21: The directional coupler according to Claim 11, wherein a length of each of the

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inner line electrode and the outer line electrode is less than a quarter of a wavelength (discussed in the reasons for rejection of claim 13 above).

Claim 24: The directional coupler according to Claim 11, wherein the inner line electrode and the outer line electrode are arranged on the same plane.

Claim 26: The directional coupler according to Claim 11, wherein at least one of the inner line electrode and the outer line electrode is divided into line electrode components arranged on a plurality of planes, and the divided line electrode components are connected in series with each other through the first or the second via hole.

Claim 27: The directional coupler according to Claim 11, further comprising a fourth dielectric layer and a ground electrode arranged on the fourth dielectric layer, wherein a capacitance is formed between the ground electrode and ends of the inner line electrode and the outer line electrode (discussed in the reasons for rejection of claim 19 above).

### ***Allowable Subject Matter***

Claims 12, 14, 15, 17, 20, 22, 23 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN O. TAKAOKA whose telephone number is (571)272-1772. The examiner can normally be reached on 9:00a - 5:30p Mon - Fri.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean O Takaoka/  
Primary Examiner, Art Unit 2817